PORTABLE ELECTRONIC DEVICE

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] The present application is a continuation of U.S. patent application Ser. No. 16/532,237, entitled "PORTABLE ELECTRONIC DEVICE," filed Aug. 5, 2019, which is a continuation of U.S. patent application Ser. No. 15/826,400, entitled "PORTABLE ELECTRONIC DEVICE," filed Nov. 29, 2017, now U.S. Pat. No. 10,425,561, issued Sep. 24, 2019, which claims the benefit of U.S. Provisional Application No. 62/556,190, entitled "PORTABLE ELECTRONIC DEVICE," filed Sep. 8, 2017, the contents of which are incorporated herein by reference in their entireties for all purposes.

FIELD

[0002] Described embodiments can relate to portable electronic devices. More specifically, described embodiments can relate to a portable electronic device having an input/output (I/O) assembly.

BACKGROUND

[0003] As portable electronic devices continue to include increasingly greater numbers of features, integration of those features into a single device becomes increasingly complex. One particular feature that has become ubiquitous in popular portable electronic devices is imaging operations enabled by camera modules. Because camera modules can include fragile components such as lens and electronics, proper mounting of a camera module is important to protect the components from damage. Furthermore, improper alignment of the camera module with a portable electronic device can result in unexpected or even degraded imaging performance.

SUMMARY

[0004] This paper describes various exemplary input/output assemblies for portable electronic devices and methods of manufacturing and assembling portable electronic devices.

[0005] According to one embodiment, a portable electronic device is described. The portable electronic device can include an enclosure having a back wall. The portable electronic device can also include an input/output (I/O) assembly carried by the back wall. The I/O assembly can include a first camera module, a second camera module, a strobe module positioned between the first camera module and the second camera module. The I/O assembly can also include an audio transducer positioned adjacent to the strobe module. The audio transducer can detect audible signals.

[0006] According to another embodiment, a portable electronic device is described. The portable electronic device can include a display assembly that can present visual content. The portable electronic device can also include a front cover glass overlying the display assembly and a rear cover glass having an opening. The portable electronic device can also include a side wall retainer that can carry the front and rear cover glass and an I/O assembly positioned at the opening. The I/O assembly can include a first camera module, a second camera module, and a strobe module positioned between the first camera module and the second camera module. The I/O assembly can be secured to the rear cover glass and the side wall retainer.

[0007] According to yet another embodiment, a method for mounting an I/O assembly to a rear cover glass of a portable electronic device is described. The rear cover glass can have an opening and can be secured to a side wall retainer of the portable electronic device. The method can include securing the I/O assembly to a brace piece. The method can also include inserting the I/O assembly through the opening such that a portion of the I/O assembly protrudes from an exterior surface of the rear cover glass and the brace piece is positioned interior to the rear cover glass. The method can further include securing the brace piece to the side wall retainer. The method can further include connecting the portion of the I/O assembly and the exterior surface together by a turret that surrounds the portion of the I/O assembly.

[0008] Other aspects and advantages of the invention will become apparent from the following detailed description taken in conjunction with the accompanying drawings which illustrate, by way of example, the principles of the described embodiments.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] The disclosure will be readily understood by the following detailed description in conjunction with the accompanying drawings, wherein like reference numerals designate like structural elements, and in which:

[0010] FIG. **1**A is a front perspective view of a portable electronic device in accordance with some embodiments.

[0011] FIG. **1**B is a rear perspective view of the portable electronic device shown in FIG. **1**A.

[0012] FIG. **2** is an exploded view of a portion of a portable electronic device and an I/O assembly in accordance with some embodiments.

[0013] FIG. **3** is a see-through view of a portion of a portable electronic device and an I/O assembly in accordance with some embodiments.

[0014] FIG. **4**A is a perspective view of a camera cover glass in accordance with some embodiments.

[0015] FIG. **4**B is a cross-sectional view of the camera cover glass shown in FIG. **4**A.

[0016] FIG. **5**A is a first perspective view of a trim in accordance with some embodiments.

[0017] FIG. **5**B is a second perspective view of the trim that is inverted compared to FIG. **5**A.

[0018] FIG. **5**C is a cross-sectional view of the trim shown in FIG. **5**A.

[0019] FIG. **6**A is a plan view of a portion of a portable electronic device in accordance with some embodiments.

[0020] FIG. **6**B is a cross-sectional view of the portion of the portable electronic device shown in FIG. **6**A.

[0021] FIG. **7** is an internal plan view of a portion of a portable electronic device in accordance with some embodiments.

[0022] FIGS. **8**A and **8**B illustrate a flex connector in accordance with some embodiments.

[0023] FIG. **9** is a cross-sectional view of a portion of an I/O assembly carrying an audio transducer in accordance with some embodiments.

[0024] FIG. **10** is a flowchart depicting a method for assembling an I/O assembly in accordance with some embodiments.